

STW Express

File Copy

09/443,516

(FILE 'HOME' ENTERED AT 17:01:24 ON 10 APR 2002)

FILE 'MEDLINE, BIOTECHDS, EMBASE, BIOSIS, SCISEARCH, CANCERLIT, CAPLUS'  
ENTERED AT 17:13:39 ON 10 APR 2002

L1 416 S HELGESON J?/AU OR AUSTIN-PHILLIPS S?/AU OR NAESS S?/AU  
L2 950 S LATE (S) BLIGHT (S) RESIST?  
L3 257 S L2 AND POTATO (S) PLANT#  
L4 188 S SOLANUM BULBOCASTANUM OR BULBOCASTANUM  
L5 1010046 S CHROMOSOM##  
L6 19834 S RAPD OR CT88 RFLP OR CT148 RFLP OR CT252 RFLP OR CT68 RFLP  
L7 2991 S SOFT ROT  
L8 32805 S ERWINIA OR VERTICILL?  
L9 1550445 S TRANSFORM?  
L10 16369 S SOMATIC (S) HYBRIDI?  
L11 457986 S VECTOR  
L12 10 S LATE BLIGHT RESISTANCE GENE  
L13 22 S L1 AND L2  
L14 257 S L2 AND L3  
L15 13 S L4 AND L14  
L16 13 S L14 AND L6  
L17 4 S L16 AND L8  
L18 6 S L13 AND L6  
L19 1 S L16 AND L9  
L20 0 S L16 AND L11  
L21 1 S L16 AND L12  
L22 10 S L1 AND L12  
L23 5 DUP REM L12 (5 DUPLICATES REMOVED)  
L24 13 DUP REM L13 (9 DUPLICATES REMOVED)  
L25 7 DUP REM L16 (6 DUPLICATES REMOVED)  
L26 2 DUP REM L17 (2 DUPLICATES REMOVED)  
L27 3 DUP REM L18 (3 DUPLICATES REMOVED)  
L28 5 DUP REM L22 (5 DUPLICATES REMOVED)  
L29 10 S L24 AND L4  
L30 10 DUP REM L29 (0 DUPLICATES REMOVED)  
L31 4 S L25 AND L4  
L32 3 S L31 AND L1  
L33 0 S SCHUMANN ?/AU AND L4

FILE 'AGRICOLA, BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHNO, CABA,  
CAPLUS, CBNB, CIN, CONFSCI, CROPB, CROPU, ESBIODASE, FOMAD, FOREGE,  
FROSTI, FSTA, GENBANK, IFIPAT, INVESTEXT, LIFESCI, NAPRALERT, NTIS,  
PASCAL, PHIC, PHIN, PROMT, SCISEARCH, USPATFULL, ...' ENTERED AT

17:35:50

ON 10 APR 2002

L34 818 S L1  
L35 2925 S L2  
L36 493 S L4  
L37 15 S L12  
L38 6 S L35 AND L36 AND L9  
L39 0 S L35 AND L36 AND L10 AND L11  
L40 30 S L35 AND L36 AND L6  
L41 39 S 40 AND L1  
L42 7 DUP REM L40 (23 DUPLICATES REMOVED)

=>

13:39 ON 10 APR 2002

L1 416 S HELGESON J?/AU OR AUSTIN-PHILLIPS S?/AU OR NAESS S?/AU  
L2 950 S LATE (S) BLIGHT (S) RESIST?  
L3 257 S L2 AND POTATO (S) PLANT#  
L4 188 S SOLANUM BULBOCASTANUM OR BULBOCASTANUM  
L5 1010046 S CHROMOSOM##  
L6 19834 S RAPD OR CT88 RFLP OR CT148 RFLP OR CT252 RFLP OR CT68 RFLP  
L7 2991 S SOFT ROT  
L8 32805 S ERWINIA OR VERTICILL?  
L9 1550445 S TRANSFORM?  
L10 16369 S SOMATIC (S) HYBRIDI?  
L11 457986 S VECTOR  
L12 10 S LATE BLIGHT RESISTANCE GENE  
L13 22 S L1 AND L2  
L14 257 S L2 AND L3  
L15 13 S L4 AND L14  
L16 13 S L14 AND L6  
L17 4 S L16 AND L8  
L18 6 S L13 AND L6  
L19 1 S L16 AND L9  
L20 0 S L16 AND L11  
L21 1 S L16 AND L12  
L22 10 S L1 AND L12  
L23 5 DUP REM L12 (5 DUPLICATES REMOVED)  
L24 13 DUP REM L13 (9 DUPLICATES REMOVED)  
L25 7 DUP REM L16 (6 DUPLICATES REMOVED)  
L26 2 DUP REM L17 (2 DUPLICATES REMOVED)  
L27 3 DUP REM L18 (3 DUPLICATES REMOVED)  
L28 5 DUP REM L22 (5 DUPLICATES REMOVED)  
L29 10 S L24 AND L4  
L30 10 DUP REM L29 (0 DUPLICATES REMOVED)  
L31 4 S L25 AND L4  
L32 3 S L31 AND L1

L30 ANSWER 1 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
 ACCESSION NUMBER: 2001:165877 BIOSIS  
 DOCUMENT NUMBER: PREV200100165877  
 TITLE: Partial resistance to *Phytophthora infestans* in four *Solanum* crosses.  
 AUTHOR(S): Dorrance, A. E. (1); Inglis, D. A.; Helgeson, J. P.; Brown, C. R.  
 CORPORATE SOURCE: (1) OARDC, The Ohio State University, Wooster, OH, 44691: dorrance.1@osu.edu USA  
 SOURCE: American Journal of Potato Research, (January February, 2001) Vol. 78, No. 1, pp. 9-17. print.  
 ISSN: 1099-209X.  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English; Spanish  
 AB Thirty progeny from each of four *Solanum* crosses were evaluated in the field at Mount Vernon, WA, in 1996 and 1997 for partial **resistance** to *Phytophthora infestans*. Of the four parents, three have high levels of partial **resistance** to *P. infestans*; one derived from somatic hybridization of *S. bulbocastanum*, the other two from traditional breeding efforts for multiple disease **resistance**. Data were collected from each cross to estimate area under the disease progress curve (AUDPC), days to 5% disease severity threshold (DT5), and sporangia production (SP). All of these variables differed significantly among the progeny within each cross in each year. Correlation analysis indicated that DT5 was highly correlated with AUDPC for all four populations for both years. Log-transformed SP was significantly ( $P < 0.001$ ) correlated to AUDPC values for one population in both years, but the significance of the correlation was variable between years for the remaining three crosses. The variable DT5, which is composed of three components (infection efficiency, latent period, and lesion growth rate), was the most important in identifying progeny with partial **resistance to late blight** in all four crosses in this study.

L30 ANSWER 2 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
 ACCESSION NUMBER: 2001:47758 BIOSIS  
 DOCUMENT NUMBER: PREV200100047758  
 TITLE: Development and applications of a set of chromosome-specific cytogenetic DNA markers in potato.  
 AUTHOR(S): Dong, F.; Song, J.; Naess, S. K.; Helgeson, J. P.; Gebhardt, C.; Jiang, J. (1)  
 CORPORATE SOURCE: (1) Department of Horticulture, University of Wisconsin-Madison, Madison, WI, 53706: jjiang1@facstaff.wisc.edu USA  
 SOURCE: Theoretical and Applied Genetics, (November, 2000) Vol. 101, No. 7, pp. 1001-1007. print.  
 ISSN: 0040-5752.  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 SUMMARY LANGUAGE: English  
 AB Reliable and easy to use techniques for chromosome identification are critical for many aspects of cytogenetic research. Unfortunately, such techniques are not available in many plant species, especially those with a large number of small chromosomes. Here we demonstrate that fluorescence in situ hybridization (FISH) signals derived from bacterial artificial chromosomes (BACs) can be used as chromosome-specific cytogenetic DNA

25  
 1. 2  
 3 4 5

markers for chromosome identification in potato. We screened a potato BAC library using genetically mapped restriction fragment length polymorphism markers as probes. The identified BAC clones were then labeled as probes for FISH analysis. A set of 12 chromosome-specific BAC clones were isolated and the FISH signals derived from these BAC clones serve as convenient and reliable cytological markers for potato chromosome identification. We mapped the 5S rRNA genes, the 45S rRNA genes, and a potato **late blight resistance** gene to three specific potato chromosomes using the chromosome-specific BAC clones.

L30 ANSWER 3 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2001:22065 BIOSIS

DOCUMENT NUMBER: PREV200100022065

TITLE: **Resistance to late blight in Solanum bulbocastanum** is mapped to chromosome 8.

AUTHOR(S): **Naess, S. K.**; Bradeen, J. M.; Wielgus, S. M.; Haberland, G. T.; McGrath, J. M.; **Helgeson, J. P.**  
(1)

CORPORATE SOURCE: (1) Plant Disease Resistance Research Unit, Department of Plant Pathology, USDA/ARS, University of Wisconsin, Madison, WI, 53706: JPH@plantpath.wisc.edu USA

SOURCE: Theoretical and Applied Genetics, (October, 2000) Vol. 101,

No. 5-6, pp. 697-704. print.

ISSN: 0040-5752.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

AB Somatic hybrids between potato and **Solanum bulbocastanum**, a wild diploid ( $2n=2x=24$ ) Mexican species, are highly **resistant to late blight**, caused by *Phytophthora infestans*. Both randomly amplified polymorphic DNA (RAPD) and restriction fragment length polymorphism (RFLP) markers that are closely linked to the **resistance** have been noted by analysis of three different backcross-2 populations derived from two different somatic hybrids. With reference to previously published potato and tomato maps, **resistance** appears to be on the long arm of chromosome 8 and is flanked by RFLP markers CP53 and CT64. In a population of BC2 plants derived from a cross between the BC1 line J101K6 ((*S. tuberosum* PI 203900+*S. bulbocastanum* PI 243510) XKatahdin)XAtlantic, **late blight resistance** cosegregated with RFLP marker CT88 and RAPD marker OPG02-625.

L30 ANSWER 4 OF 10 BIOTECHDS COPYRIGHT 2002 DERWENT INFO AND ISI

ACCESSION NUMBER: 1999-05649 BIOTECHDS

TITLE: **New late blight resistance**  
potato plant;  
produced by recombinant expression of **Solanum bulbocastanum late blight-resistance** gene in potato transgenic plant

AUTHOR: **Helgeson J P**; Austin S; **Naess S K**

PATENT ASSIGNEE: Wisconsin-Alumni-Res.Found.

LOCATION: Madison, WI, USA.

PATENT INFO: WO 9905903 11 Feb 1999

APPLICATION INFO: WO 1998-US15910 27 Jul 1998

PRIORITY INFO: US 1997-54267 30 Jul 1997

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: WPI: 1999-153343 [13]

AN 1999-05649 BIOTECHDS  
AB A **late blight-resistant** potato plant  
(*Solanum tuberosum*) transgenic containing a region of a genome from  
*Solanum bulbocastanum* which contains a **blight**  
**-resistance** gene is claimed. Also claimed is a nucleic acid  
complementary to all or part of a ds molecule having 1 of 3 given DNA  
sequences, and a vector containing that nucleic acid. The claims also  
cover a means of monitoring **late blight-**  
**resistance** in a breeding cross of the progeny of a fertile  
somatic hybrid of *Solanum tuberosum* and *S. bulbocastanum*. This  
involves crossing the two *Solanum* sp., isolating genomic DNA and  
detecting a genetic marker, that is associated with **late**  
**blight** disease-**resistance**. Also covered is a means of  
identifying a *S. bulbocastanum* gene by cloning a DNA region  
associated with the **late blight-resistance**  
phenotype of the *Solanum bulbocastanum* x *tuberosum*  
cross, and using it to isolate clones of a *S. bulbocastanum*  
genomic library, allowing identification of **late blight**  
**-resistance** genes. The claims extend to a **late**  
**blight-resistance** gene identified in this manner, and a  
transgenic plant containing that gene. This is used to produce  
**late blight resistant** potato transgenic  
plants. (40pp)

L30 ANSWER 5 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1999:407483 BIOSIS  
DOCUMENT NUMBER: PREV199900407483  
TITLE: Toward mapping and cloning **late blight**  
**resistance** derived from the wild *Solanum*  
*bulbocastanum* using potato + *S.*  
*bulbocastanum* somatic hybrids.  
AUTHOR(S): Bradeen, James M. (1); Ness, S. Kristine (1); Haberlach,  
Geraldine T. (1); Wielgus, Susan M. (1); **Helgeson,**  
**John P. (1)**  
CORPORATE SOURCE: (1) Department of Plant Pathology, USDA-ARS, University of  
Wisconsin, 1630 Linden Drive, Madison, WI, 53706 USA  
SOURCE: Hortscience, (June, 1999) Vol. 34, No. 3, pp. 533-534.  
Meeting Info.: 96th Annual International conference of the  
American Society for Horticultural Science Minneapolis,  
Minnesota, USA July 27-31, 1999 American Society for  
Horticultural Science  
. ISSN: 0018-5345.  
DOCUMENT TYPE: Conference  
LANGUAGE: English

L30 ANSWER 6 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1998:352549 BIOSIS  
DOCUMENT NUMBER: PREV199800352549  
TITLE: Somatic hybrids between *Solanum*  
*bulbocastanum* and potato: A new source of  
**resistance of late blight**.  
AUTHOR(S): **Helgeson, J. P. (1)**; Pohlman, J. D.; Austin, S.;  
Haberlach, G. T.; Wielgus, S. M.; Ronis, D.; Zambolim, L.;  
Tooley, P.; McGrath, J. M.; James, R. V.; Stevenson, W. R.  
CORPORATE SOURCE: (1) USDA/ARS Plant Disease Resistance Res. Unit, Dep.  
Plant  
Pathology, Univ. Wis., Madison, WI 53706 USA  
SOURCE: Theoretical and Applied Genetics, (May, 1998) Vol. 96, No.  
6-7, pp. 738-742.  
ISSN: 0040-5752.

DOCUMENT TYPE: Article  
LANGUAGE: English

AB **Solanum bulbocastanum**, a wild, diploid ( $2n = 2x = 24$ ) Mexican species, is highly **resistant** to *Phytophthora infestans*, the fungus that causes **late blight** of potato. However this 1 EBN species is virtually impossible to cross directly with potato. PEGmediated fusion of leaf cells of **S. bulbocastanum** PI 245310 and the tetraploid potato line **S. tuberosum** PI 203900 ( $2n = 4x = 48$ ) yielded hexaploid ( $2n = 6x = 72$ ) somatic hybrids that retained the high **resistance** of the **S. bulbocastanum** parent. RFLP and RAPD analyses confirmed the hybridity of the materials. Four of the somatic hybrids were crossed with potato cultivars Katahdin or Atlantic. The BC1 progeny segregated for **resistance** to the US8 genotype (A-2 mating type) of *P. infestans*. **Resistant** BC1 lines crossed with susceptible cultivars again yielded populations that segregated for **resistance** to the fungus. In a 1996 field-plot in Wisconsin, to which no fungicide was applied, two of the BC1 lines, from two different somatic hybrids, yielded 1.36 and 1.32 kg/plant under a severe **late-blight** epidemic. In contrast, under these same conditions the cultivar Russet Burbank yielded only 0.86 kg/plant. These results indicate that effective **resistance** to the **late-blight** fungus in a sexually incompatible *Solanum* species can be transferred into potato breeding lines by somatic hybridization and that this **resistance** can then be further transmitted into potato breeding lines by sexual crossing.

L30 ANSWER 7 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1997:329209 BIOSIS  
DOCUMENT NUMBER: PREV199799628412  
TITLE: **Resistance of late blight in four Solanum populations.**  
AUTHOR(S): Dorrance, A. E. (1); Inglis, D. A. (1); Helgeson, J. P.; Brown, C. R.  
CORPORATE SOURCE: (1) WSU-REU, Mount Vernon, WA 98273 USA  
SOURCE: Phytopathology, (1997) Vol. 87, No. 6 SUPPL., pp. S25.  
Meeting Info.: Annual Meeting of the American Phytopathological Society Rochester, New York, USA August 9-13, 1997  
ISSN: 0031-949X.  
DOCUMENT TYPE: Conference; Abstract  
LANGUAGE: English

L30 ANSWER 8 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1996:553816 BIOSIS  
DOCUMENT NUMBER: PREV199699276172  
TITLE: Multiple site tests of **resistance to late blight of Solanum bulbocastanum** -potato somatic hybrids and their progeny.  
AUTHOR(S): **Helgeson, J. P.**; Haberlach, G. T.; McGrath, J.-M.; James, R. V.; Stevenson, W. R.  
SOURCE: American Potato Journal, (1996) Vol. 73, No. 8, pp. 362.  
Meeting Info.: 80th Annual Meeting of the Potato Association of America Idaho Falls, Idaho, USA August 11-15, 1996  
ISSN: 0003-0589.  
DOCUMENT TYPE: Conference  
LANGUAGE: English

L30 ANSWER 9 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1996:14815 BIOSIS

DOCUMENT NUMBER: PREV199698586950  
TITLE: **Resistance to late blight and early blight** in potato cultivars and breeding lines.  
AUTHOR(S): James, R. V. (1); Stevenson, W. R.; **Helgeson, J. P.**  
CORPORATE SOURCE: (1) Dep. Plant Pathol., Univ. Wisconsin-Madison, Madison, WI 53706 USA  
SOURCE: Phytopathology, (1995) Vol. 85, No. 10, pp. 1195.  
Meeting Info.: Annual Meeting of the American Phytopathological Association Pittsburgh, Pennsylvania, USA  
August 12-16, 1995  
ISSN: 0031-949X.  
DOCUMENT TYPE: Conference  
LANGUAGE: English

L30 ANSWER 10 OF 10 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.  
ACCESSION NUMBER: 1996:92551 BIOSIS  
DOCUMENT NUMBER: PREV199698664686  
TITLE: **Late blight and early blight resistance** from somatic hybrids between **Solanum bulbocastanum** and potato.  
AUTHOR(S): **Helgeson, John P.**; James, R. Vaughan; Stevenson, Walter R.  
SOURCE: American Potato Journal, (1995) Vol. 72, No. 10, pp. 629.  
Meeting Info.: 79th Annual Meeting of the Potato Association of America Bangor, Maine, USA July 23-27, 1995  
ISSN: 0003-0589.  
DOCUMENT TYPE: Conference  
LANGUAGE: English

ANSWER 1 OF 5 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE 1

ACCESSION NUMBER: 2001:47758 BIOSIS  
DOCUMENT NUMBER: PREV200100047758  
TITLE: Development and applications of a set of  
chromosome-specific cytogenetic DNA markers in potato.  
AUTHOR(S): Dong, F.; Song, J.; Naess, S. K.; Helgeson, J. P.;  
Gebhardt, C.; Jiang, J. (1)  
CORPORATE SOURCE: (1) Department of Horticulture, University of  
Wisconsin-Madison, Madison, WI, 53706:  
jjiangl@facstaff.wisc.edu USA  
SOURCE: Theoretical and Applied Genetics, (November, 2000) Vol.  
101, No. 7, pp. 1001-1007. print.  
ISSN: 0040-5752.  
DOCUMENT TYPE: Article  
LANGUAGE: English  
SUMMARY LANGUAGE: English

AB Reliable and easy to use techniques for chromosome identification are  
critical for many aspects of cytogenetic research. Unfortunately, such  
techniques are not available in many plant species, especially those with  
a large number of small chromosomes. Here we demonstrate that  
fluorescence  
in situ hybridization (FISH) signals derived from bacterial artificial  
chromosomes (BACs) can be used as chromosome-specific cytogenetic DNA  
markers for chromosome identification in potato. We screened a potato BAC  
library using genetically mapped restriction fragment length polymorphism  
markers as probes. The identified BAC clones were then labeled as probes  
for FISH analysis. A set of 12 chromosome-specific BAC clones were  
isolated and the FISH signals derived from these BAC clones serve as  
convenient and reliable cytological markers for potato chromosome  
identification. We mapped the 5S rRNA genes, the 45S rRNA genes, and a  
potato late blight resistance gene  
to three specific potato chromosomes using the chromosome-specific BAC  
clones.

L23 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:858278 CAPLUS  
DOCUMENT NUMBER: 135:148008  
TITLE: Resistance to late blight in Solanum bulbocastanum is  
mapped to chromosome 8  
AUTHOR(S): Naess, S. K.; Bradeen, J. M.; Wielgus, S. M.;  
Haberlach, G. T.; McGrath, J. M.; Helgeson, J. P.  
CORPORATE SOURCE: USDA/ARS Plant Disease Resistance Research Unit,  
Department of Plant Pathology, University of  
Wisconsin, Madison, WI, 53706, USA  
SOURCE: Theoretical and Applied Genetics (2000), 101(5-6),  
697-704  
CODEN: THAGA6; ISSN: 0040-5752  
PUBLISHER: Springer-Verlag  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Somatic hybrids between potato and Solanum bulbocastanum, a wild diploid  
(2n=2x=24) Mexican species, are highly resistant to late blight, caused  
by  
Phytophthora infestans. Both randomly amplified polymorphic DNA (RAPD)  
and restriction fragment length polymorphism (RFLP) markers that are  
closely linked to the resistance have been noted by anal. of three  
different backcross-2 populations derived from two different somatic  
hybrids. With ref. to previously published potato and tomato maps,  
resistance appears to be on the long arm of chromosome 8 and is flanked  
by



RFLP markers CP53 and CT64.  
REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR  
THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L23 ANSWER 3 OF 5 BIOTECHDS COPYRIGHT 2002 DERWENT INFO AND ISI

ACCESSION NUMBER: 1999-05649 BIOTECHDS

TITLE: New late blight resistance potato plant;  
produced by recombinant expression of Solanum  
bulbocastanum **late blight-**  
**resistance gene** in potato transgenic  
plant

AUTHOR: Helgeson J P; Austin S; Naess S K

PATENT ASSIGNEE: Wisconsin-Alumni-Res.Found.

LOCATION: Madison, WI, USA.

PATENT INFO: WO 9905903 11 Feb 1999

APPLICATION INFO: WO 1998-US15910 27 Jul 1998

PRIORITY INFO: US 1997-54267 30 Jul 1997

DOCUMENT TYPE: Patent

LANGUAGE: English

OTHER SOURCE: WPI: 1999-153343 [13]

AN 1999-05649 BIOTECHDS

AB A late blight-resistant potato plant (Solanum tuberosum) transgenic  
containing a region of a genome from Solanum bulbocastanum which  
contains

a blight-resistance gene is claimed. Also claimed is a nucleic acid  
complementary to all or part of a ds molecule having 1 of 3 given DNA  
sequences, and a vector containing that nucleic acid. The claims also  
cover a means of monitoring late blight-resistance in a breeding cross  
of

the progeny of a fertile somatic hybrid of Solanum tuberosum and S.  
bulbocastanum. This involves crossing the two Solanum sp., isolating  
genomic DNA and detecting a genetic marker, that is associated with late  
blight disease-resistance. Also covered is a means of identifying a S.  
bulbocastanum gene by cloning a DNA region associated with the late  
blight-resistance phenotype of the Solanum bulbocastanum x tuberosum  
cross, and using it to isolate clones of a S. bulbocastanum genomic  
library, allowing identification of late blight-resistance genes. The  
claims extend to a **late blight-resistance**  
**gene** identified in this manner, and a transgenic plant containing  
that gene. This is used to produce late blight resistant potato  
transgenic plants. (40pp)

L23 ANSWER 4 OF 5 BIOTECHDS COPYRIGHT 2002 DERWENT INFO AND ISI

ACCESSION NUMBER: 1987-10726 BIOTECHDS

TITLE: Somatic hybrids between Solanum brevidens and Solanum  
tuberosum: expression of a **late blight**  
**resistance gene** and potato-leaf-roll  
resistance;  
disease-resistance; crop improvement (conference  
abstract)

AUTHOR: Helgeson J P; Hunt G J; Haberlach G T; Ehlenfeldt M; Austin  
S

LOCATION: USDA, ARS, University of Wisconsin, Madison, WI 53706, USA.

SOURCE: Int.Congr.Plant Tissue Cell Cult; (1986) 6 Meet., 386

DOCUMENT TYPE: Journal

LANGUAGE: English

AN 1987-10726 BIOTECHDS

AB Hexaploid somatic hybrids resulting from mesophyll protoplast fusions

between *Solanum brevidens* Phil., PI 218228, and *Solanum tuberosum* L. (potato), PI 203900 were tested for late blight resistance using 2 races of *Phytophthora infestans* Monte., de Bary. The *S. tuberosum* parent was

a

late blight differential possessing the R4 gene which confers resistance to race 0. The *S. brevidens* parent is resistant to potato-leaf-roll virus. Inoculations with both compatible (race 1.3.4.5) and

incompatible

(race 0) races of *P. infestans* clearly demonstrated the expression of the

**late blight resistance gene** in all of the hybrid progeny tested. Most of the hybrids tested were also resistant to potato-leaf-roll virus (PLRV), indicating that the *S. brevidens* genes for PLRV resistance were present and expressed. Some of these fusion hybrids are fertile and crosses were made with *S. tuberosum* cultivars. Preliminary results on the expression of the R4 resistance gene in the sexual progeny were presented. (0 ref)

L23 ANSWER 5 OF 5 BIOTECHDS COPYRIGHT 2002 DERWENT INFO AND ISI

ACCESSION NUMBER: 1986-10828 BIOTECHDS

TITLE: Somatic hybrids between *Solanum brevidens* and *Solanum tuberosum*: expression of a **late blight resistance gene** and potato leaf roll resistance;

potential potato crop improvement

AUTHOR: Helgeson J P; Hunt G J; Haberlach G T; Austin S

LOCATION: United States Department of Agriculture, University of Wisconsin, 1630 Linden Drive, Madison, WI 53706, USA.

SOURCE: Plant Cell Rep.; (1986) 5, 3, 212-14

CODEN: PCRPD8

DOCUMENT TYPE: Journal

LANGUAGE: English

AN 1986-10828 BIOTECHDS

AB Hybrids between *Solanum brevidens* and *Solanum tuberosum* (potato), obtained by protoplast fusion, were tested for late blight resistance and

potato-leaf-roll virus (PLRV) resistance. Hybrids, parental plants and Russet Burbank were sprayed with a suspension of zoospores and sporangia of *Phytophthora infestans* race 0 (incompatible with *S. tuberosum* PI 203900) or race 1.3.4.5 (compatible with all plants). In order to test PLRV resistance, 5 viruliferous aphids were confined on each plant for 5-6 days. Plants were assayed for the presence of PLRV in leaf tissue by ELISA. All fusion progeny inoculated with race 0 were significantly

less

necrotic than the *S. brevidens* parent and their level of resistance was similar to that of the *S. tuberosum* parent. The R4 resistance gene was functioning in all fusion progeny tested. After inoculation with the host-compatible race 1.3.4.5 all plants tested showed extensive necrosis and there was no significant difference in resistance between hybrids

and

parents. Clonal copies of 10 of the lines resistant to *P. infestans*

race

0 were be PLRV resistant. (15 ref)

BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.DUPLICATE 1  
ACCESSION NUMBER: 1995:132104 BIOSIS  
DOCUMENT NUMBER: PREV199598146404  
TITLE: Identification of somatic hybrids of dihaploid *Solanum tuberosum* lines and *S. brevidens* by species **RAPD** patterns and assessment of disease resistance of the hybrids.  
AUTHOR(S): Rokka, Veli-Matti (1); Xu, Yong-Sheng; Kankila, Jyri (1); Kuusela, Anja; Pulli, Seppo (1); Pehu, Eija  
CORPORATE SOURCE: (1) Agric. Res. Cent., Inst. Crop Soil Sci., Plant Breeding  
SOURCE: Sect., FIN-31600 Jokioinen Finland  
Euphytica, (1994) Vol. 80, No. 3, pp. 207-217.  
ISSN: 0014-2336.  
DOCUMENT TYPE: Article  
LANGUAGE: English  
AB Symmetric somatic hybrids were produced by electrofusion of protoplasts of

two dihaploid tuber-bearing **potato** (*Solanum tuberosum* L.) lines and *Solanum brevidens* Phil., a diploid non-tuber-bearing wild **potato** species. A total of 985 **plants** was obtained. Verification of nuclear hybridity of putative hybrids was based on additive **RAPD** patterns, general morphological characteristics and chromosome counts. 53 (90%) calli regenerated into **plants** which were identified as somatic hybrids. Most of the hybrids were aneuploids at the tetraploid (4 times ) or hexaploid (6 times ) level.

The

20 hybrids tested expressed a high level of **resistance** to **potato** virus Y (PVY-N) characteristic of the *S. brevidens* parent. **Resistance** to late blight (*Phytophthora infestans* (Mont.) de Bary) varied between hybrids, but was on average better than that of the fusion parents. **Resistance** of hybrids to bacterial stem rot (*Erwinia carotovora* subsp. *atroseptica* (van Hall) Dye) was not superior to that of commercial **potato** cultivars.

L42 ANSWER 7 OF 7 BIOBUSINESS COPYRIGHT 2002 BIOSIS

ACCESSION NUMBER: 97:85994 BIOBUSINESS

DOCUMENT NUMBER: 0943529

TITLE: Production of somatic hybrids between *S. tuberosum* L. and **late blight resistant** Mexican wild potato species.

AUTHOR: Thieme R; Darsow U; Gavrilenko T; Dorokhov D; Tiemann H

CORPORATE SOURCE: Fed. Centre Breed. Res. Cultivated Plants, Inst. Breed. Crop Plants, 18190 Gross Luesewitz, Germany.

SOURCE: Euphytica, (1997) Vol.97, No.2, p.189-200.  
ISSN: 0014-2336.

DOCUMENT TYPE: ARTICLE

FILE SEGMENT: NONUNIQUE

LANGUAGE: English

AB Interspecific somatic hybrids between dihaploid breeding clones of potato,

*S. tuberosum* and two accessions of wild Mexican species *S. pinnatisectum* and the hybrid line *S. pinnatisectum* times *S. bulbocastanum* were regenerated following electrofusion of mesophyll protoplasts to combine important agricultural traits of *S. tuberosum* and a high level of **late blight resistance** from selected wild accessions. In two fusion combinations 239 calli were regenerated; 162 from 195 calli analysed were identified as hybrids by means of isozyme analysis of peroxidases and, for some hybrid clones, by **RAPD** analysis. Depending on the fusion combination, 47-89 percent of the somatic hybrids had the expected ploidy level and 7-16 percent were mixoploids. Somatic hybrids were phenotypically intermediate as compared to their parents and some of them were able to be backcrossed sexually with potato. Fertility and crossability depended on combination and ploidy

level of the somatic hybrids. In tests with detached leaves the wild partner clones had a high **late blight resistance** score of 8,6 and 8,9; the susceptible *tuberosum*-partners of 2,8 and 3,5, respectively. Nearly 25 percent of somatic hybrids had a **resistance** level of 6 or higher in the first year of assessment. The average **resistance** value of most somatic hybrids was lower than the average parental level. The reasons for

variation in **resistance** values are discussed in connection with the practical application of fusion hybrids.

reserved.

TITLE (IN ENGLISH):       **Resistance to late blight**  
                               in *Solanum bulbocastanum* is mapped  
                               to chromosome 8

AUTHOR:                    NAESS S. K.; BRADEEN J. M.; WIELGUS S. M.; HABERLACH  
                               G. T.; MCGRATH J. M.; HELGESON J. P.

CORPORATE SOURCE:         USDA/ARS Plant Disease Resistance Research Unit,  
                               Department of Plant Pathology, University of  
                               Wisconsin, Madison, WI 53706, United States

SOURCE:                   Theoretical and Applied Genetics, (2000), 101(5-6),  
                               697-704, 34 refs.  
                               ISSN: 0040-5752   CODEN: THAGA6

DOCUMENT TYPE:           Journal

BIBLIOGRAPHIC LEVEL:     Analytic

COUNTRY:                  Germany, Federal Republic of

LANGUAGE:                 English

AVAILABILITY:            INIST-395, 354000092512170040

AN     2000-0525204     PASCAL

CP     Copyright .COPYRGT. 2000 INIST-CNRS. All rights reserved.

AB     Somatic hybrids between potato and *Solanum*  
           *bulbocastanum*, a wild diploid (2n=2x=24) Mexican species, are  
           highly **resistant to late blight**, caused by  
           *Phytophthora infestans*. Both randomly amplified polymorphic DNA (**RAPD**) and restriction fragment length polymorphism (RFLP) markers  
           that are closely linked to the **resistance** have been noted by  
           analysis of three different backcross-2 populations derived from two  
           different somatic hybrids. With reference to previously published potato  
           and tomato maps, **resistance** appears to be on the long arm of  
           chromosome 8 and is flanked by RFLP markers CP53 and CT64. In a  
           population of BC.sub.2 plants derived from a cross between the BC.sub.1  
           line J101K6 [(*S. tuberosum* PI 203900+*S. bulbocastanum* PI  
           243510) xKatahdin] x Atlantic, **late blight**  
           **resistance** cosegregated with RFLP marker CT88 and **RAPD**  
           marker OPG02-625.

=>

: ZT574

TITLE: Somatic hybrids between *Solanum bulbocastanum* and potato: a new source of resistance to late blight

AUTHOR: Helgeson J P (Reprint); Pohlman J D; Austin S; Haberlach G

T; Wielgus S M; Ronis D; Zambolim L; Tooley P; McGrath J M; James R V; Stevenson W R

CORPORATE SOURCE: UNIV WISCONSIN, DEPT PLANT PATHOL, USDA ARS, PLANT DIS RESISTANCE RES UNIT, MADISON, WI 53706 (Reprint)

COUNTRY OF AUTHOR: USA

SOURCE: THEORETICAL AND APPLIED GENETICS, (MAY 1998) Vol. 96, No. 6-7, pp. 738-742.  
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.  
ISSN: 0040-5752.

DOCUMENT TYPE: Article; Journal

FILE SEGMENT: LIFE; AGRI

LANGUAGE: English

REFERENCE COUNT: 15

\*ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS\*

AB *Solanum bulbocastanum*, a wild, diploid ( $2n = 2x = 24$ ) Mexican species, is highly resistant to *Phytophthora infestans*, the fungus that causes late blight of potato. However this 1 EBN species is virtually impossible to cross directly with potato. PEG-mediated fusion of leaf cells of *S. bulbocastanum* PI 245310 and the tetraploid potato line *S. tuberosum* PI 203900 ( $2n = 4x = 48$ ) yielded hexaploid ( $2n = 6x = 72$ ) somatic hybrids that retained the high resistance of the *S. bulbocastanum* parent. RFLP and RAPD analyses confirmed the hybridity of the materials. Four of the somatic hybrids were crossed with potato cultivars Katahdin or Atlantic. The BC1 progeny segregated for resistance to the US8 genotype (A-2 mating type) of *P. Infestans*. Resistant BC1 lines crossed with susceptible cultivars again yielded populations that segregated for resistance to the fungus. In a 1996 field-plot in Wisconsin, to which no fungicide was applied? two of the BC1 lines, from two different somatic hybrids, yielded 1.36 and 1.32 kg/plant under a severe late-blight epidemic. In contrast, under these same conditions the cultivar Russet Burbank yielded only 0.86 kg/plant. These results indicate that effective resistance to the late-blight fungus in a sexually incompatible *Solanum* species can be transferred into potato breeding lines by somatic hybridization and that this resistance can then be further transmitted into potato breeding lines by sexual crossing.

WEST 2.0

Set Name Query  
side by sideHit Count Set Name  
result set*DB=DWPI,USPT; PLUR=YES; OP=ADJ*L1 Helgeson-J\$ 4 L1L2 Helgeson-j\$.in. or Austin-phillips-s\$.in. or Naess-S\$.in. 14 L2*DB=USPT,DWPI; PLUR=YES; OP=ADJ*L3 late blight resist\$ 1 L3L4 late blight and resist\$ 245 L4L5 solanum bulbocastanum 1 L5L6 potato and bulbocastanum 1 L6L7 soft rot or Erwinia or Verticillium 4443 L7L8 l4 and l7 68 L8L9 L8 and l4 68 L9L10 L9 and l2 0 L10L11 l9 and chromosome 8 0 L11L12 chromosom\$ and l9 5 L12L13 marker and (RADP or CT88 or CT148 or CT252 or CT68) 0 L13L14 (RADP or CT88 or CT148 or CT252 or CT68) 10 L14L15 L14 and l9 0 L15L16 l9 and l7 68 L16L17 l16 and vector 14 L17L18 l14 and hybridiz\$ 0 L18L19 somatic hybridization 120 L19*DB=USPT,PGPB,DWPI; PLUR=YES; OP=ADJ*L20 L19 and l9 1 L20

END OF SEARCH HISTORY